method and the device of Chu. Further, the Examiner states that Applicants' previous arguments are not persuasive because Yamamoto et al. is relied upon to show equivalence of surfactants.

However, the polyethylene glycol surfactants which the Examiner evaluates as equivalents to n-octyl-β-D-thioglucoside or sucrose monolaurate surfactants are not polyethylene glycol. Rather, Yamamoto et al. disclose polyethylene glycol ether. Polyethylene glycol, illustrated as a surface active agent in Chu, and polyethylene glycol ether, illustrated as a surface active agent in Yamamoto et al., are quite different chemical compounds. Therefore, the surface active agent in Chu and the surface active agent in Yamamoto et al. cannot be said to be equivalent, and the Examiner's motivation for combining the teachings of Chu and Yamamoto et al. is unfounded.

The presently claimed invention describes a chromatography medium comprising a reactive layer which includes a surface active agent that is solidified when dried, wherein the surface active agent comprises a sugar in a hydrophilic part of the surface active agent.

A surface active agent that is solidified when dried means a surface active agent which is a solid at normal temperature and normal pressure. Surface active agents such as Tween20, which is illustrated in Chu, and Tritonx405, both of which are often used in biosensors, are in liquid states at normal temperature and normal pressure. Specifically, the melting point of Tween 20 is 0.1 degrees C, and the melting point of Tritonx405 is 6 degrees C, both below normal temperature. Therefore, these are not surface active agents which are solidified when dried, as required in Applicants' claims.

When a surface active agent which is liquid at normal temperature and normal pressure, such as those discussed above, is dried by a drying method illustrated in the present invention, the surface active agent either stays in liquid state, with no change, or the surface active agent is evaporated. Furthermore, when a water solution of a surface active agent which is liquid at normal temperature and normal pressure is dried, the water is removed by evaporation, and the remaining surface active agent stays in liquid state.

On the contrary, when a water solution of a surface active agent that is solidified when dried (i.e., solid at normal temperature and normal pressure) is dried, the water is removed by

evaporation, and the surface active agent always remains in solid state.

Chu discloses a laundry list of surface active agents, some of which are solid at normal temperature and normal pressure. However, almost all of the surface active agents disclosed by Chu are in liquid state at normal temperature and normal pressure. Chu does not teach or suggest differentiating between surface active agents in the laundry list, to choose one which is solidified when dried (i.e., solid at normal temperature and normal pressure.) Further, since the purpose of the surface active agent of Chu is to cause the liquid sample to flow faster through the portion(s) of the reactive membrane, it not essential that it is solidified when dried, as required in the present invention.

A surface active agent which is solidified when dried is used in the chromatography medium of the present invention because the object of the present invention is to suppress the devitalization of a reactive part of protein that is fixed to a reactive layer of the chromatography medium to the lowest extent. This results in enhancing the preservation stability of the chromatography medium by lengthening the quality maintenance period, and further, by relaxing the storage requirements. These advantages are different in their nature from the effects obtained by the surface active agent of Chu. Chu does not teach or suggest the advantages of a surface active agent which is solidified when dried, as required in Applicants' invention.

Additionally, the surface active agent of the present invention comprises a sugar in a hydrophilic part, in addition to being solidified when dried. This causes reduction in the influences affected to proteins by the surface active agent, enhances the preservation stability of the chromatography medium and lengthens the quality maintenance period.

Yamamoto et al. disclose a list of surface active agents, and disclose a surface active agent which has a sugar in a hydrophilic part. However, Yamamoto et al. also disclose surface active agents which do not include a sugar in a hydrophilic part, such as polyethylene glycol monododecylether. Yamamoto et al. do not teach or suggest differentiating between the surface active agents in the list, to choose one comprising a sugar in a hydrophilic part. Further, since the surface active agent in Yamamoto et al. has an object of solubilizing a substrate that is

hydrophobic to advance the reaction of an enzyme, it is not essential that it has a sugar in a hydrophilic part, as required in the present invention.

A surface active agent comprising a sugar in a hydrophilic part is used in the chromatography medium of the present invention because the object of the present invention is to reduce the influences affected to proteins from the surface active agent by the function of the sugar included in the surface active agent. Additionally, the preservation stability of the chromatography medium is enhanced and the quality maintenance period is lengthened. These advantages are different in their nature from the effects obtained by the surface active agent of Yamamoto et al. Yamamoto et al. do not teach or suggest the advantages of a surface active agent comprising a sugar in a hydrophilic part, as required in Applicants' invention.

As is evident from the above discussion, the advantages of the present invention are a result of the chromatography medium comprising a reactive layer which includes a surface active agent which is solidified when dried and has a sugar in a hydrophilic part, and these advantages are not taught or suggested by Chu or Yamamoto et al., alone or in combination.

Additionally, the Examiner's motivation to combine the references is unfounded, as Yamamoto et al. teach polyethylene glycol ether, rather than polyethylene glycols, as asserted by the Examiner.

For these reasons, the invention of claims 5, 12, 27, 31, 41, 45, 53 and 60 is clearly patentable over Chu in view of Yamamoto et al.

The rejection of claim 49 under 35 U.S.C. § 103(a) as being unpatentable over Chu in view of Yamamoto et al. and further in view of Iwata et al. is respectfully traversed.

The comments set forth above concerning the rejection over Chu in view of Yamamoto et al. are equally applicable to this rejection. Since claim 49 is directly dependent on claim 12, the subject matter of claim 49 is patentable over Chu in view of Yamamoto et al. for the reasons that the subject matter of claim 12 is patentable over this combination of references. The teachings of Iwata et al. do not remedy the deficiencies of the teachings of Chu in view of Yamamoto et al.

For these reasons, the invention of claim 49 is clearly patentable over Chu in view of Yamamoto et al. and further in view of Iwata et al.

Therefore, in view of the above remarks, it is submitted that each of the grounds of rejection set forth by the Examiner has been overcome, and that the application is in condition for allowance. Such allowance is solicited.

Regarding The Second Supplemental Information Disclosure Statement

Applicants submitted a Second Supplemental Information Disclosure Statement on February 28, 2005. The Examiner is respectfully requested to return an initialed copy of the PTO-1449 form with the next correspondence.

Respectfully submitted,

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